



Quality Assessment for Open Topographic Maps - some thoughts on sustainable data caption, creation and design

Karel Kriz,¹

1. University of Vienna, Department of Geography and Regional Research, Vienna, Austria; karel.kriz@univie.ac.at

Abstract: Depiction of terrain in mountainous regions has at all times played an important role within topographic mapping and high mountain cartography. Over centuries cartography has searched for adequate methods to characterize the surface of the earth in a desirable way. The result of intensive engagement in this field is documented in manifold esthetically well designed large-scale topographic maps many national mapping agencies as well as private cartographic institutions provide. Access to high quality base data as well as the map production process including design issues has always been in the manual era a tedious undertaking, however needless to say the results in many cases were and still are outstanding. Unfortunately the situation in the current fully-automated digital age of freely accessible online topographic base maps is far from being satisfactory. The list of deficiencies range from the usage of insufficient geo-data such as incorrect height data, inappropriate transportation networks, disadvantageous relief representation, incorrect vegetation coverage and naming all the way to poor design. In populated urbanized areas from a cartographic point of view the map design is in most cases acceptable. Huge problems however arise in sparsely populated and remote mountainous regions. Nowadays, high quality base data for large-scale mapping is abundantly available even though not always free of charge. Freely available geo-tagged information is becoming more and more popular however, it still lacks full coverage as well as a thorough (geo-spatial) quality check. This information resulting from collaborative (mapping) initiatives utilizing volunteered geographic information can be seen as a ubiquitous data source focusing currently primarily on populated and highly frequented areas. However, creating high quality esthetically well designed seamless maps covering also remote areas from such data is – as many online examples (unfortunately) illustrate – still challenging. In order to alleviate this cartographic dilemma the main data acquisition and map design cornerstones have to be subsequently addressed. Many of these peculiarities originate in the fact that more focus and interest is devoted to populated areas, the geo-data is all too often not verified and in most cases there is no sophisticated map design framework defined. Therefore, topographic maps must guarantee a scale dependent, spatially correct depiction of the selected displayed objects and most of all communicate a realistic representation of the earth's surface. Furthermore, the underlying data must be verified and the symbolization based on well-defined map design principles. Finding and evaluating an appropriate workflow utilizing these principles can therefore be seen today as a major task for large-scale topographic mapping based in freely available geo-data. New technologies are now challenging cartography, both in the process of quality assurance of geo-data as well as in the methods of representation. The requirement for individualized access to personalized data and targeted communication of geospatial information is an important concern within the production process of large scale topographic maps. The future of topographic mapping will therefore build on quality assessment as well as design concepts of the past and focus on future innovative, technological access possibilities. This paper focusses on the production process of online topographic maps with special emphasis on geo-data availability and quality assessment as well as map design issues for use in a high mountain environment. It will compare and discuss currently accessible geo-data sources as well as online applications and finally present an approach to accommodate the above described difficulties to facilitate sustainable data caption, creation and design for an open topographic map.

Keywords: topographic mapping, quality assessment, map design, open access